



### Initial Potential Projects List

#### **Chehalis River Basin Flood Relief Projects 2013-2015 Capital Budget**

View proposed projects at <http://goo.gl/maps/WA1bj>

October 18, 2012

Summary of Proposed Flood Relief Projects Submitted To Date for Further Consideration by CRBFA	
<b>1. Grays Harbor County</b>	<p><b>A. <i>Chehalis River Bank Erosion Risk Assessment for the Satsop Business Park industrial water line</i></b> -- The Grays Harbor Public Development Authority owns an industrial water well site and water line that runs along the south shore of the Chehalis River in Grays Harbor County. A section of the pipeline and associated access road has experienced flood damage and needs protection or relocation from future bank erosion during flooding events. The Phase I project requires a hydrology analysis of the risks and costs associated with the continued flood damage. The exposed water line (cooling water and industrial supply), electrical cables, fiber optic cable and access road would represent a major economic loss for the Satsop Business Park and the 650 Megawatt Grays Harbor Energy plant if they were lost. [Note: A 650 Mwt plant can provide the electrical needs for approximately 600,000 people.]</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$52,000</b> (Hydrology analysis and update of Chehalis River hydraulic model to understand risks, costs and alternatives).</li> <li>• <b>2013-15 Cost-- \$52,000</b> (Hydrology analysis and update of Chehalis River hydraulic model to understand risks, costs and alternatives).</li> <li>• <b>Project Type – Erosion response, Infrastructure preservation.</b></li> </ul>
	<p><b>B. <i>Elma-Porter Flood Mitigation Project -- South Elma Road (Wakefield Rd.), Dunlap Road, Porter Creek Road West</i></b> – Project consists of following three parts:</p> <ul style="list-style-type: none"> <li>• Placing ~900 foot overflow bridge on Wakefield Road Bridge north of South Elma Bridge over the Chehalis River.</li> <li>• Performing river modeling, pre-design, and project permitting to improve through-flow on Dunlap Road.</li> <li>• Performing river modeling, pre-design, and project permitting to improve through-flow on Porter Creek Road West, at the South Bank Road/Porter Creek Road West Intersection, and on South Bank Road between the South Bank Road/Porter Creek Road Intersection and Riding Road (at the Sharon Grange).</li> </ul> <p>Project is intended to provide a viable egress route for residents and businesses south of the Chehalis river from southwest of Porter to Montesano. Businesses include Satsop Development park, Briggs nursery, commercial farms and the gas fired power plant. These can all be isolated by flooding along with several smaller businesses during flood events.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate – \$6,200,000.</b> <ul style="list-style-type: none"> <li>○ \$6,000,000 (Construct overflow bridge on Wakefield Road Bridge).</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>○ Dunlap and Porter Creek Roads: <ul style="list-style-type: none"> <li>▪ \$50,000 (Refine model and perform alternatives analysis for the reach between Porter Creek Road and S. Elma Road).</li> <li>▪ \$150,000 (Refine flood relief alternatives and do pre-design, final design and permitting for culvert installation in the Porter Creek/South Elma junction area).</li> </ul> </li> <li>● <b>2013-15 Cost-- \$6,200,000</b> <ul style="list-style-type: none"> <li>○ \$6,000,000 (Construct overflow bridge on Wakefield Road Bridge).</li> <li>○ \$50,000 (Refine model and perform alternatives analysis for the reach between Porter Creek Road and S. Elma Road).</li> <li>○ \$150,000 (Refine flood relief alternatives and do pre-design, final design and permitting for culvert installation in the Porter Creek/South Elma junction area).</li> </ul> </li> <li>● <b>Project Type – Modeling, Culvert installation, Bridge construction.</b></li> </ul> <p><b>C. Satsop River Floodplain Restoration</b> -- The Satsop River Floodplain Restoration project consists of reclaiming 100 acres of migration zone by removing parts or all of 5,200 lineal feet of constructed dike and 2,500 lineal feet of riprapped riverbank. Project is intended to restore floodplain function, re-establish access to off-channel habitat and allow the Satsop River to access 2/3 of its lower reach migration zone. The expansion of the migration zone of the Satsop River will reduce the continuous eroding of the banks of the river creating losses of valuable prime agricultural soils. Eight agricultural landowners will have their businesses protected by this project.</p> <ul style="list-style-type: none"> <li>● <b>Project Cost Estimate -- \$1,009,800</b> (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>● <b>2013-15 Cost-- \$509,800</b> (\$50,000 Jobs Now already spent and \$450,000 Jobs Now assumed for re-appropriation to 2013-2015 leaving \$509,800 in remaining cost for Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>● <b>Project Type – Floodplain restoration.</b></li> </ul> <p><b>D. Wishkah Road (Kersh) Flood Levee</b> – Major project elements for the project consist of: (1) Land acquisition to provide more flood plain storage on two parcels located right along the Wishkah River; (2) Elevating nine homes to raise them above the flood plain to help alleviate continual damage and provide safety for their residents; and (3) construction of a sheet pile wall (dike) or combination dirt dike 2,000 feet long to prevent rain and tidal flooding from closing the road. Project is intended to provide flood damage relief to approximately nine homes and one business from tidal and river flooding and prevent the road from having to close to through traffic and important emergency fire, police and EMS vehicles.</p> <ul style="list-style-type: none"> <li>● <b>Project Cost Estimate -- \$2, 912,000</b> (Final design and permitting for \$400,000 and construction, land acquisition and home elevation for \$2,512,000).</li> <li>● <b>2013-15 Cost-- \$2, 912,000</b> (Final design, permitting and construction, land acquisition and home elevation).</li> <li>● <b>Project Type – Land acquisition, Home elevation, Levee/dike (new).</b></li> </ul>
2. Aberdeen	<p><b>E. Market Street Dike</b> – Project is to construct a 2,800 foot long dike along the western bank of the Wishkah River and tie it to existing higher ground on each end. The dike would be</p>

constructed primarily within the existing public street right of way of Market Street. The dike would consist of a combination of different sections constructed to above the base flood elevation. It is anticipated that most of the project would consist of raising the road and sidewalk to create sufficient high ground to function as a dike. The dike will prevent water from overtopping the existing river bank and flooding commercial and residential property to the west, as well work to prevent flooding of Market Street and adjacent streets. There are about 80 homes and five businesses within the City that are located landward of the dike that could benefit from the project. During flood events Market Street and some of the adjacent streets are flooded and traffic is either stopped or impaired.

- **Project Cost Estimate -- \$670,000** (\$113,000 for Preliminary engineering design, costing, \$557,000 for final design and construction).
- **2013-15 Cost-- \$113,000** (Preliminary engineering design, costing).
- **Project Type -- Dike (new).**

**F. Trail/Dike Behind Burger King** – Project is to construct a 300 foot long concrete floodwall along the eastern bank of the Wishkah River between the two Wishkah bridges. The wall would consist of a footing and concrete wall constructed to above the base flood elevation. A five foot wide pathway would be placed on the land side of the wall and connected to higher ground near both bridges. The floodwall will prevent water from overtopping the existing river bank and flooding commercial and residential property to the east, as well work to prevent flooding of State Highway. There are about 30 homes and 30 businesses within the City that are located east of the floodwall that could benefit from the project. During flood events the State Highway is flooded and traffic is either stopped or impaired. [Note: This project works best in tandem with the Wishkah River East Bank Dike project for full benefit. Without the tandem project the benefit is limited.]

- **Project Cost Estimate -- \$140,000** (Final design and construction).
- **2013-15 Cost-- \$140,000** (Final design and construction).
- **Project Type – Dike (new).**

**G. Wishkah River East Bank Dike** – Project is to construct a 1,200 foot long dike along the eastern bank of the Wishkah River and tie it to existing higher ground on each end. The dike would be constructed primarily within the existing public street right of way. The dike will consist of a combination of sections constructed to above the base flood elevation. Some tide gates will be required on existing storm drain outfalls to the river. The dike will prevent water from overtopping the existing river bank and flooding commercial and residential property to the east; as well will work to prevent flooding of the State Highway. There are about 30 homes and 30 businesses within the City that are located east of the floodwall that could benefit from the project. During flood events the State Highway is flooded and traffic is either stopped or impaired. [Note: This project works best in tandem with the Trail/Dike Behind Burger King project for full benefit. Without the tandem project the benefit is limited.]

- **Project Cost Estimate -- \$270,000** (Final design and construction).
- **2013-15 Cost-- \$270,000** (Final design and construction).
- **Project Type – Dike (new).**



3. Cosmopolis	<p><b>H. Mill Creek Dam Improvements</b> – Project is to replace or remove the Mill Creek Dam that was breached during the November 2008 storm. The population directly affected by this project is approximately 325 people in Cosmopolis and at least 200 in South Aberdeen. Also two businesses (Western Peterbilt with 25 employees and D4 Sports with seven employees) are adjacent to Mill Creek and are directly affected by its flood flows. Western Peterbilt provides Cosmopolis with tax base revenue on annual sales in excess of \$14,000,000. The Grays Harbor County Road Maintenance Shop (with 10-15 employees) is also directly adjacent to Mill Creek. It stores critical equipment for the maintenance of roads in the central part of Grays Harbor County.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate</b> -- \$2,000,000 (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>• <b>2013-15 Cost</b>-- \$250,000 (\$100,000 for Hydraulic analysis, \$150,000 for Alternatives analysis).</li> <li>• <b>Project Type</b> – Dam replacement, Dam removal.</li> </ul>
4. Montesano	<p><b>I. Mary's River Lumber Bank Protection</b> -- Ongoing erosion of the Chehalis River shoreline is currently threatening Mary's River Lumber Mill. The Mill and the City of Montesano seek to stabilize the bank along the property so that mill operations at the site can continue. Proposed project is to preserve jobs and critical facilities threatened by the loss of Montesano Road, treatment plant and Mary's River Lumber Mill (120 family wage jobs).</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate</b> -- \$2,000,000 (Placeholder -- Final design, permitting, construction).</li> <li>• <b>2013-15 Cost</b>-- \$2,000,000 (Placeholder -- Final design, permitting and construction).</li> <li>• <b>Project Type</b> – Bank stabilization, Erosion control.</li> </ul>
5. Oakville	Will not be submitting projects.
6. Lewis County	<p><b>J. Scheuber Road (SR 6) Culvert</b> – Project is to install a culvert to relieve ponding behind and overtopping of SR 6 in vicinity of Scheuber Road. Ponding and overtopping is a result of previous expansion and modification of SR6.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate</b> -- \$TBD (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>• <b>2013-15 Cost</b>-- \$TBD (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>• <b>Project Type</b> – Culvert installation.</li> </ul>
7. Centralia	<p><b>K. City of Centralia China Creek Flood Project</b> – Project is to design and construct a series of water retention structures in the China Creek watershed for short term storage of runoff during high rainfall events. The major emphasis will be on storage in the upper watershed but some off-channel storage in the flood-prone area along China Creek may be incorporated. The major components of the project are project design, property agreements with landowners where the structures will be located or property acquisition, SEPA review and permitting, and construction. Upstream storage on China Creek will reduce flooding within the downtown residential and commercial areas of Centralia for several blocks on each side of China Creek between Yew Street and Railroad Avenue. Rainfall runoff and storage option modeling is presently underway and is being paid for (\$50,000) by Centralia. Modeling will be completed by January 1, 2013.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate</b> -- \$16,800,000 (\$1,500,000 for Engineering design, SEPA and</li> </ul>



	<p>permitting, \$4,500,000 for Land acquisition and \$10,800,000 for Construction).</p> <ul style="list-style-type: none"> <li>• <b>2013-15 Cost-- \$6,000,000</b> (\$1,500,000 for Engineering design, SEPA and permitting, \$4,500,000 for Land acquisition).</li> <li>• <b>Project Type – Water retention.</b></li> </ul>
8. Chehalis	<p><b>L. Airport Levee (Phase II)</b> -- Project consists of elevating existing airport levy using both earthen material where the footprint at the base is large enough and floodwalls constructed generally with pilings atop existing levy where drainage or rights-of-way occur at the base to protect the airport operation, the commercial area east of the airport runway and I-5 freeway from closure during a major Chehalis River flood event. Airport road at the south end of the airport property would be elevated several feet and terminate in the West Street overcrossing approach.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$2,600,000</b> (Phase II -- Construction and mitigation).</li> <li>• <b>2013-15 Cost-- \$2,600,000</b> (Phase II -- Construction and mitigation).</li> <li>• <b>Project Type – Levee raise/extend.</b></li> </ul> <p><b>M. Dillenbaugh Creek Realignment</b> -- Project is to excavate a meandering channel as necessary to divert the flow of Dillenbaugh Creek from its undercrossing at Rice Road through Stan Hedwall Park to a confluence with Newaukum River within the Park. The concept is to create significant habitat enhancement for both the involved Newaukum and Dillenbaugh reaches and would be designed to convey flood flows through the Park rather than through the southwest portions of Chehalis and the I-5 freeway. Project is intended to prevent flood damage by diverting flood flows of the Dillenbaugh and to some extent, the Newaukum, around currently affected areas of southwest Chehalis and the freeway. There are approximately 74 residential structures and 13 businesses (cursory map count – subject to detailed study), as well as the freeway itself that are affected by flood flows in this reach of the Dillenbaugh. Other benefits of this project include significant habitat enhancement for fish migration and spawning, opportunities for public access points in the Park, creation of ponding areas for waterfowl, and significant reduction of the cost of construction when the I-5 freeway is widened in the future.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$500,000</b> (Hydraulic/hydrology analysis, preliminary design, alternatives analysis, costing, final design, permitting, and construction).</li> <li>• <b>2013-2015 Next Stage Cost -- \$500,000</b> (Hydraulic/hydrology analysis, preliminary design and costing, permitting, final engineering and construction).</li> <li>• <b>Project Type - Flood conveyance, Habitat enhancement.</b></li> </ul>
9. Napavine	<p><b>N. Kirkland Road Culvert Project</b> – Project is to install a culvert along the north side of Kirkland Road to guide water to the Newaukum River via the culvert and an existing slough. Project would also raise Kirkland Road as a means of eliminating flooding issues on the road itself. Benefits of the project include protecting major business in the area, ensuring emergency vehicle access and reducing impacts to traffic getting on and off the freeway at Exit 72. Major businesses include McDonald's, Burger King, Ramblin Jacks Restaurant, Subway, gas stations, and the Bethel church as well as many families living in the area.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$2,555,000</b> (Preliminary design, alternatives analysis, costing at \$55,000 final design, permitting and construction at \$2,500,000).</li> <li>• <b>2013-15 Cost-- \$2,555,000</b> (Preliminary design, alternatives analysis and costing).</li> </ul>



	<ul style="list-style-type: none"> <li>• <b>Project Type – Culvert installation, Road raise/regrade.</b></li> </ul>
<b>10. Pe Ell</b>	<p><b>O. Town of Pe Ell Wastewater Treatment Plant Flood Prevention Dike</b> -- Project is to build a dike on the Chehalis River part of the wastewater treatment plant boundary to prevent flooding of the treatment plant. Project would prevent flooding of the treatment plant which could send raw sewage into the Chehalis river which did occur in the 2007 flood.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$521,000</b> (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>• <b>2013-15 Cost-- \$TBD</b> (Preliminary design, alternatives analysis and costing).</li> <li>• <b>Project Type – Dike (new).</b></li> </ul>
<b>11. Thurston County</b>	Will not be submitting projects.
<b>12. Bucoda</b>	<p><b>P. Bucoda Levee Improvement (Phase II)</b> -- Project is to raise and extend the existing levee in order to fully encircle the Town of Bucoda's wellhead and drinking water equipment with a continuous levee system that protects the Town's drinking water system. The proposed project is viewed as essential to protect the Town's drinking water system including the wellhead, pumps, generator and equipment from future flood damage. This drinking water system is the sole source of potable water and water for firefighting for the Town's citizens.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$305,000</b> (Phase II -- Final design and construction).</li> <li>• <b>2013-15 Cost-- \$305,000</b> (Phase II -- Final design and construction).</li> <li>• <b>Project Type – Levee raise/extend.</b></li> </ul> <p><b>Q. Regrade Main Street</b> – Project is to raise Main St. to allow passage of emergency vehicles during flood events. When flooding occurs in Bucoda there are 50 homes in the southwest section of town which are cut off from the main road. During the flood in Jan. 2009 these homes and the citizens were isolated from emergency services for two days.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$174,263</b> (Preliminary design, alternatives analysis and costing for \$109,506; Final design, permitting and construction for \$49,657; Direct cost at \$15,100).</li> <li>• <b>2013-15 Cost-- \$174,263</b> (Preliminary design, alternatives analysis, costing, final design, permitting and construction).</li> <li>• <b>Project Type – Road raise/regrade.</b></li> </ul>
<b>13. Conservation Commission</b>	<p><b>R. Chehalis River Basin Fish Habitat Projects</b> -- 119 sites in the upper basin and 20 in the lower basin have been identified that would provide water quality and fish habitat benefits. Conservation commission is currently looking to prioritize ~20 projects and is working with landowners and NRCS to determine where and how best to proceed. Projects would consist of placing large wood along the streambanks to create fish habitat and to lower the amount of sediment entering the river, sloping back the banks, and planting native trees along the river to create future shade, stabilize banks and create aquatic inhabitants food source.</p> <ul style="list-style-type: none"> <li>• <b>Project Cost Estimate -- \$2,000,000</b> (Design, permitting, construction of various projects).</li> <li>• <b>2013-15 Cost-- \$2,000,000</b> (Design, permitting and construction of various projects).</li> <li>• <b>Project Type – Habitat enhancement.</b></li> </ul>